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## **2007 MARTEN AND FISHER HARVEST SURVEY**

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### **ABSTRACT**

*A survey was completed to determine the number of harvest tag holders who set traps for marten and fisher, the number of animals caught, the types of traps used, and the number of days trapped. In 2007, 1,548 furtakers obtained a harvest tag to trap marten or fisher. About 32% of the tag holders set traps for marten (499 trappers) and 35% set traps for fisher (544). The estimated 499 trappers spent about 4,407 days trapping marten ( $\bar{x}$  = 9 days/trapper), captured 423 marten (included animals released alive), and registered 318 marten (included incidentally caught animals). About 64% of marten trappers captured at least one marten. Compared to 2006, the number of furtakers trapping marten and their days of effort was not significantly different, but the number of marten registered increased 51%, and the days of effort per registered marten decreased 41%. An estimated 544 fisher trappers spent nearly 5,900 days trapping fisher ( $\bar{x}$  = 11 days/trapper), captured 399 fisher (included animals released alive), and registered 306 fisher (included incidentally caught animals). About 38% of fisher trappers captured at least one fisher. Compared to 2006, the number of furtakers trapping fisher declined 11%, the days of effort declined 13%, and the number of fisher registered decreased 34%. Furthermore, the days of effort per registered fisher increased 34%.*

### **INTRODUCTION**

The Natural Resources Commission and Department of Natural Resources (DNR) have the authority and responsibility to protect and manage the wildlife resources of the state of Michigan. Harvest surveys are a management tool used to help accomplish this statutory responsibility. The main objectives of this harvest survey were to determine the number of trappers who set traps for marten (*Martes americana*) and fisher (*M. pennanti*), the types of traps used, the number of days trapped, and the number of animals captured.



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Efforts to restore the American marten and fisher have been successful throughout the Upper Peninsula (UP) (Williams et al. 2007). As a result, the first modern fisher trapping season was initiated in 1989, and the first modern marten trapping season was initiated in 2000.

In 2007, the marten and fisher trapping season was 15 days in the UP (December 1-15). The entire UP, except Drummond Island and the Pictured Rocks National Lakeshore, was open to marten and fisher trapping. In order to trap either marten or fisher, trappers were required to obtain a free harvest tag, in addition to a Fur Harvester License. Trappers were limited to one marten and three fisher, except no more than one fisher could be taken in Management Unit B (Figure 1). Successful trappers were required to register all fisher and marten taken by December 20, 2007. Trappers were not allowed to keep incidental marten and fisher that were caught. However, trappers were required to bring these incidental catches to a registration station if they could not be released alive. Trappers could use body-gripping (e.g., conibear) traps and foothold traps to capture marten and fisher. Live traps were also legal if set within 150 yards of a residence or farm building.

## **METHODS**

The DNR provided all marten and fisher trappers the option to report information about their trapping activity voluntarily via the Internet. This option was advertised on the DNR website and an email message was sent to all trappers that obtained either a marten or fisher harvest tag and had provided an email address to the DNR (193 trappers). Trappers reported whether they trapped marten or fisher, number of days spent afield, number of marten and fisher caught and released alive, and number of marten and fisher registered (registration estimates included incidentally caught animals that were not returned to the trapper). Trappers were also asked to indicate their impression of the status of the marten and fisher populations in the county where they primarily trapped (i.e., absent, stable, increasing, or decreasing). Following the 2007 marten and fisher trapping season, a questionnaire was sent to all harvest tag holders that had not already voluntarily reported harvest information via the Internet. Trappers receiving the questionnaire in the mail were asked the same questions as trappers responding on the internet.

Although all harvest tag holders were sent a questionnaire, not everybody returned their questionnaire. To extrapolate from the tag holders that returned their questionnaire to all people obtaining harvest tags, estimates were calculated using a stratified random sampling design that included four strata (Cochran 1977). Trappers were stratified based on the type of harvest tags obtained (i.e., marten tags [67 trappers], fisher tags [44], or both tag types [1,410]) and whether they had voluntarily reported their trapping activity on the Internet (27). The statewide estimate of the mean number of days required to harvest a marten and fisher was calculated using a different ratio of effort to harvest for each stratum (i.e., separate ratio estimator). The number of animals registered for each stratum was used as an auxiliary variate to improve the precision of ratio estimates.

A 95% confidence limit (CL) was calculated for each estimate. In theory, the CL can be added and subtracted from the estimate to calculate the 95% confidence interval. The confidence interval is a measure of the precision associated with the estimate and implies that the true value would be within this interval 95 times out of 100. Unfortunately, there are several other possible sources of error in surveys that are probably more serious than theoretical

calculations of sampling error. They include failure of participants to provide answers (nonresponse bias), question wording, and question order. It is very difficult to measure these biases; thus, estimates were not adjusted for these possible biases.

Statistical tests are used routinely to determine the likelihood that the differences among estimates are larger than expected by chance alone. The overlap of 95% confidence intervals was used to determine whether estimates differed. Non-overlapping 95% confidence intervals was equivalent to stating that the difference between the means was larger than would be expected 995 out of 1,000 times, if the study had been repeated (Payton et al. 2003).

Questionnaires were mailed initially during mid-January 2008, and up to two follow-up questionnaires were mailed to nonrespondents. Questionnaires were undeliverable to 26 harvest tag holders. Questionnaires were returned by 1,066 of 1,487 people receiving the questionnaire (72% response rate). In addition, 27 people voluntarily reported information about their trapping activity via the Internet before the random sample was selected.

## **RESULTS AND DISCUSSION**

### **Marten**

In 2007, 1,548 trappers obtained harvest tags to trap either marten or fisher. Marten harvest tags were obtained by 1,478 trappers, and fisher harvest tags were obtained by 1,503 trappers. Men obtained most of the marten and fisher harvest tags (1,466). Women obtained 76 harvest tags, and the sex of six tag holders was unknown. About 32% of the marten and fisher tag holders set traps for marten (499 trappers, Table 1). Trappers spent 4,407 days trapping ( $\bar{x} = 8.8 \pm 0.3$  days/trapper), captured 423 marten, and registered 318 marten (Table 2). About  $64 \pm 3\%$  of trappers successfully captured at least one marten. The greatest numbers of marten were captured in Chippewa (72), Alger (70), and Baraga (60) counties.

Compared to 2006, the number of people trapping marten increased 3% (499 versus 483 trappers), and trapping effort decreased 10% (4,407 versus 4,921 days) (Figure 2), although neither change was significantly different. The number of marten captured increased significantly by 66% between 2006 and 2007 (423 versus 254 marten; included animals released alive). Furthermore, the number of marten registered increased significantly by 51% between 2006 and 2007 (318 versus 211 marten). The mean number of days of effort per registered marten was  $13.9 \pm 1.0$  days in 2007 which decreased significantly by 41% from 2006 (13.9 versus 23.4 days, Figure 3).

Most trappers used body-gripping type traps (e.g., conibears) to capture marten ( $83 \pm 2\%$ ), although foothold traps also were used frequently ( $41 \pm 3\%$ ). Among trappers using body-gripping traps, the mean number of body-gripping traps set per day was  $6.2 \pm 0.5$ . Among trappers using foothold traps, the mean number of foothold traps set per day was  $4.6 \pm 0.4$ .

Forty-one percent of marten trappers ( $\pm 3\%$ ) believed marten numbers were increasing in the county where they trapped most often, while  $39 \pm 3\%$  thought marten numbers were stable,  $7 \pm 1\%$  thought marten were declining,  $8 \pm 2\%$  indicated marten were not present, and  $5 \pm 1\%$  did not comment on the status of marten.

## **Fisher**

About 35% of the marten and fisher tag holders set traps for fisher (544 trappers, Table 1). Trappers spent 5,900 days trapping ( $10.8 \pm 0.3$  days/trapper), captured 399 fisher, and registered 306 fisher (Table 3). About  $38 \pm 3\%$  of trappers successfully captured at least one fisher. The greatest numbers of fisher were captured in Houghton (56), Iron (54), and Gogebic (50) counties (Table 3).

Compared to 2006, the number of people trapping fisher decreased significantly by 11% (544 versus 608 trappers), and trapping effort decreased significantly by 13% (5,900 versus 6,759 days) (Figure 4). The number of fisher captured decreased significantly by 28% between 2006 and 2007 (399 versus 554 fisher; included animals released alive). Furthermore, the number of fisher registered decreased significantly by 34% between 2006 and 2007 (306 versus 462 fisher). The mean number of days of effort per registered fisher was  $19.6 \pm 1.9$  days in 2007 which increased significantly by 34% from 2006 ( $19.6$  versus  $14.6$  days, Figure 5).

Most trappers used body-gripping traps (e.g., conibears) to capture fisher ( $83 \pm 2\%$ ), although foothold traps also were used frequently ( $45 \pm 3\%$ ). Among trappers using body-gripping traps, the mean number of body-gripping traps set per day was  $6.7 \pm 0.5$  traps. Among trappers using foothold traps, the mean number of foothold traps set daily was  $5.1 \pm 0.3$  traps.

Eighteen percent of fisher trappers ( $\pm 2\%$ ) believed fisher numbers were increasing in the county where they trapped most often, while  $47 \pm 3\%$  thought fisher numbers were stable,  $25 \pm 2\%$  thought they were declining,  $5 \pm 1\%$  indicated fisher were absent, and  $5 \pm 1\%$  did not comment on the status of fisher.

Among trappers that set traps for fisher,  $10 \pm 2\%$  caught marten in their fisher sets. These trappers caught  $66 \pm 13$  marten.

## **ACKNOWLEDGEMENTS**

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Williams, B. W., J. H. Gilbert, and P. A. Zollner. 2007. Historical perspective on the reintroduction of the fisher and American marten in Wisconsin and Michigan. United States Department of Agriculture, Forest Service, General Technical Report NRS-5, Newton Square, Pennsylvania, USA.

Table 1. Estimated harvest tag holders that attempted to trap marten or fisher in Michigan during 2007 season.

Species sought by tag holders	%	95% CL <sup>a</sup>	Total	95% CL <sup>a</sup>
Trapped only marten	7	1	114	12
Trapped only fisher	10	1	159	15
Trapped both marten and fisher	25	1	385	21
Trapped either marten or fisher	43	2	658	25
Trapped marten <sup>b</sup>	32	1	499	23
Trapped fisher <sup>c</sup>	35	2	544	24

<sup>a</sup>95% confidence limits.

<sup>b</sup>Sum of trappers that trapped only marten and trappers that trapped both marten and fisher.

<sup>c</sup>Sum of trappers that trapped only fisher and trappers that trapped both marten and fisher.

Table 2. Estimated number of trappers, trapping effort, marten captured (including all incidental catches and releases), marten released alive, and marten registered (including incidental catches) during the 2007 Michigan trapping season.

County	Trappers		Trapping effort (days)		Marten captured <sup>a</sup>		Marten released alive		Marten registered <sup>b</sup>	
	Total	95% CL <sup>c</sup>	Total	95% CL <sup>c</sup>	Total	95% CL <sup>c</sup>	Total	95% CL <sup>c</sup>	Total	95% CL <sup>c</sup>
Alger	64	10	467	82	70	13	19	7	52	9
Baraga	48	9	287	58	60	15	11	6	48	12
Chippewa	74	11	521	88	72	13	16	6	56	9
Delta	6	3	49	33	3	2	0	0	3	2
Dickinson	17	5	193	64	0	0	0	0	0	0
Gogebic	48	9	500	97	33	16	14	15	19	5
Houghton	19	5	187	61	9	4	1	2	7	3
Iron	47	9	527	102	18	5	0	0	18	5
Keweenaw	16	5	140	49	9	4	0	0	9	4
Luce	43	8	260	57	47	15	16	11	31	7
Mackinac	16	5	120	39	9	3	0	0	9	3
Marquette	57	9	402	77	41	9	13	5	28	7
Menominee	9	4	71	32	0	0	0	0	0	0
Ontonagon	30	7	311	81	23	10	10	7	13	5
Schoolcraft	37	8	309	75	24	6	1	2	23	6
Unknown	8	4	64	35	6	4	3	3	3	2
Statewide <sup>d</sup>	499	23	4,407	265	423	35	104	24	318	22

<sup>a</sup>All marten removed from traps, including all incidental catches and releases.

<sup>b</sup>Includes incidentally caught marten that were not returned to the trapper.

<sup>c</sup>95% confidence limits.

<sup>d</sup>Number of trappers does not add up to statewide total because trappers could trap in more than one county. Column totals for trapping effort and capture may not equal statewide totals because of rounding errors.

Table 3. Estimated number of trappers, trapping effort, fisher captured (including all incidental catches and releases), fisher released alive, and fisher registered (including incidental catches) by trappers during the 2007 Michigan trapping season.

County	Trappers		Trapping effort (days)		Fisher captured <sup>a</sup>		Fisher released alive		Fisher registered <sup>b</sup>	
	Total	95% CL <sup>c</sup>	Total	95% CL <sup>c</sup>	Total	95% CL <sup>c</sup>	Total	95% CL <sup>c</sup>	Total	95% CL <sup>c</sup>
Alger	44	8	347	74	16	6	0	0	16	6
Baraga	44	8	357	73	34	13	6	5	29	10
Chippewa	55	9	492	93	21	8	9	5	13	5
Delta	9	4	84	41	1	2	0	0	1	2
Dickinson	30	7	339	83	17	7	1	2	16	7
Gogebic	73	11	752	120	50	15	14	7	36	11
Houghton	49	9	502	99	56	19	14	10	42	12
Iron	69	10	783	122	54	17	9	7	46	13
Keweenaw	14	5	156	54	27	16	6	6	9	4
Luce	32	7	218	57	19	6	6	4	13	5
Mackinac	14	4	136	43	3	2	0	0	3	2
Marquette	52	9	541	102	40	13	6	5	34	10
Menominee	32	7	323	77	9	4	0	0	9	4
Ontonagon	50	9	493	95	34	12	7	5	27	9
Schoolcraft	43	8	376	84	17	6	3	3	14	5
Unknown	3	2	0	0	0	0	0	0	0	0
Statewide <sup>d</sup>	544	24	5,900	319	399	46	80	19	306	30

<sup>a</sup>All fisher removed from traps, including all incidental catches and releases.

<sup>b</sup>Includes incidentally caught fisher that were not returned to the trapper.

<sup>c</sup>95% confidence limits.

<sup>d</sup>Number of trappers does not add up to statewide total because trappers could trap in more than one county. Column totals for trapping effort and capture may not equal statewide totals because of rounding errors.

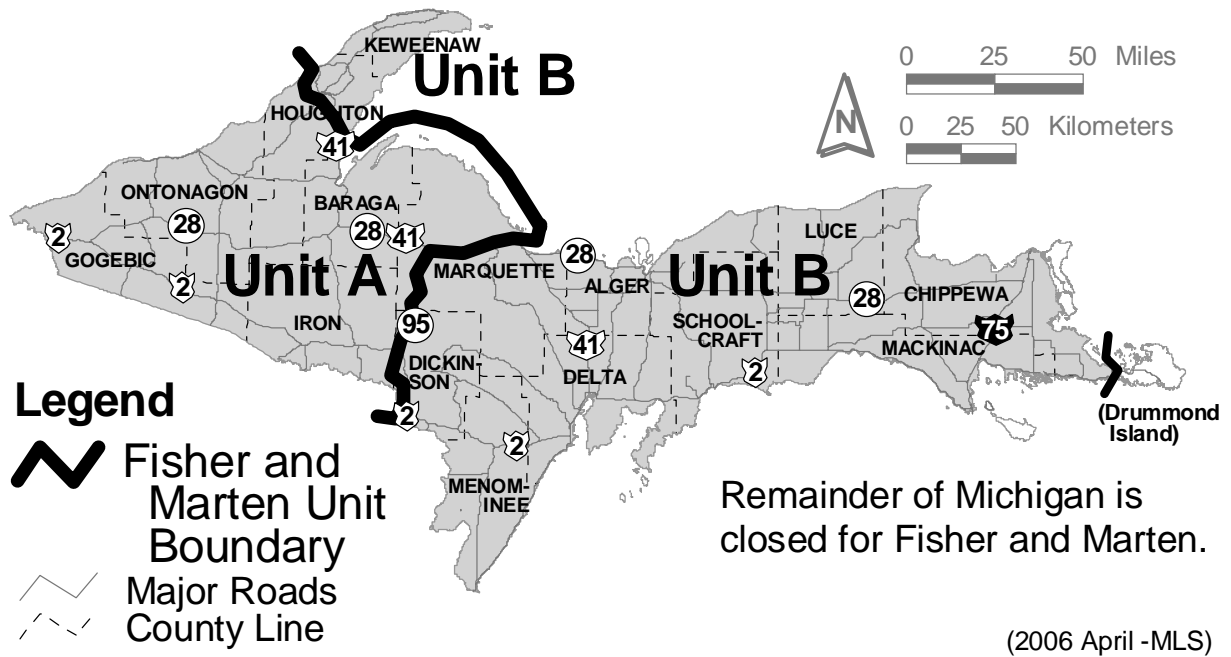


Figure 1. Marten and fisher management units in Michigan, 2007.



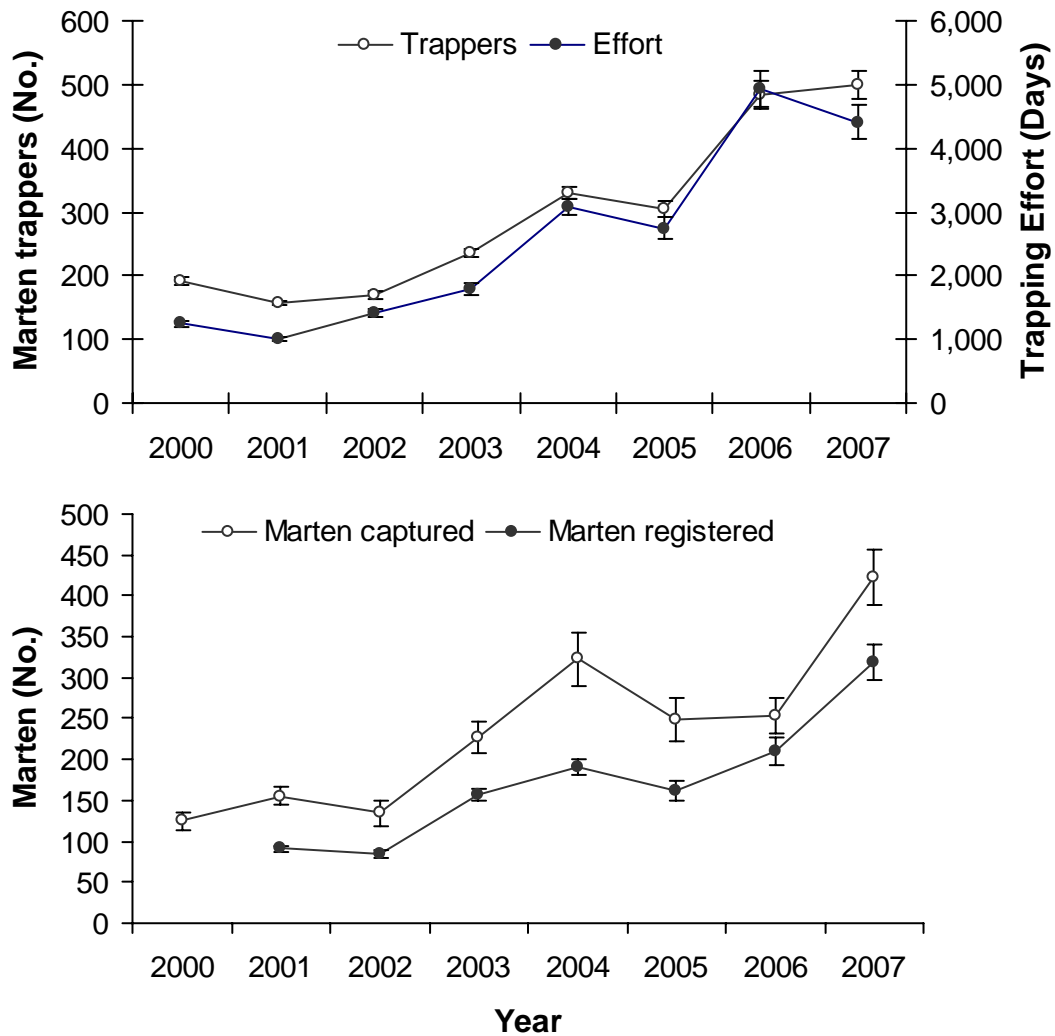


Figure 2. Estimated number of trappers, trapping effort (days), and number of marten captured and registered in Michigan, 2000-2007. Registration total was not estimated in 2000. Beginning in 2006, the estimate of marten registered included incidental animals that the trapper was not allowed to keep; estimates from previous years excluded incidental animals.

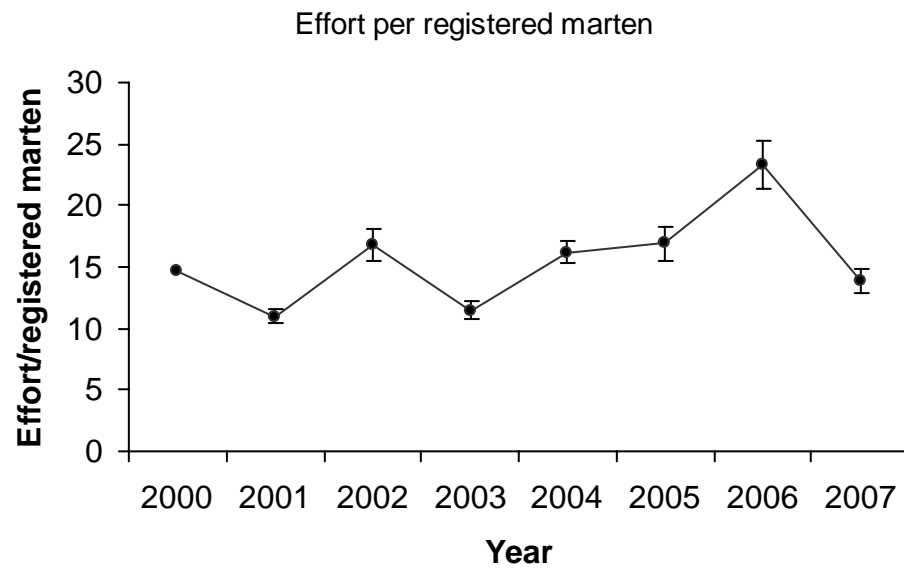


Figure 3. Estimated mean number of days required to harvest a marten in Michigan during 2000-2007. Vertical bars represent the 95% confidence interval.

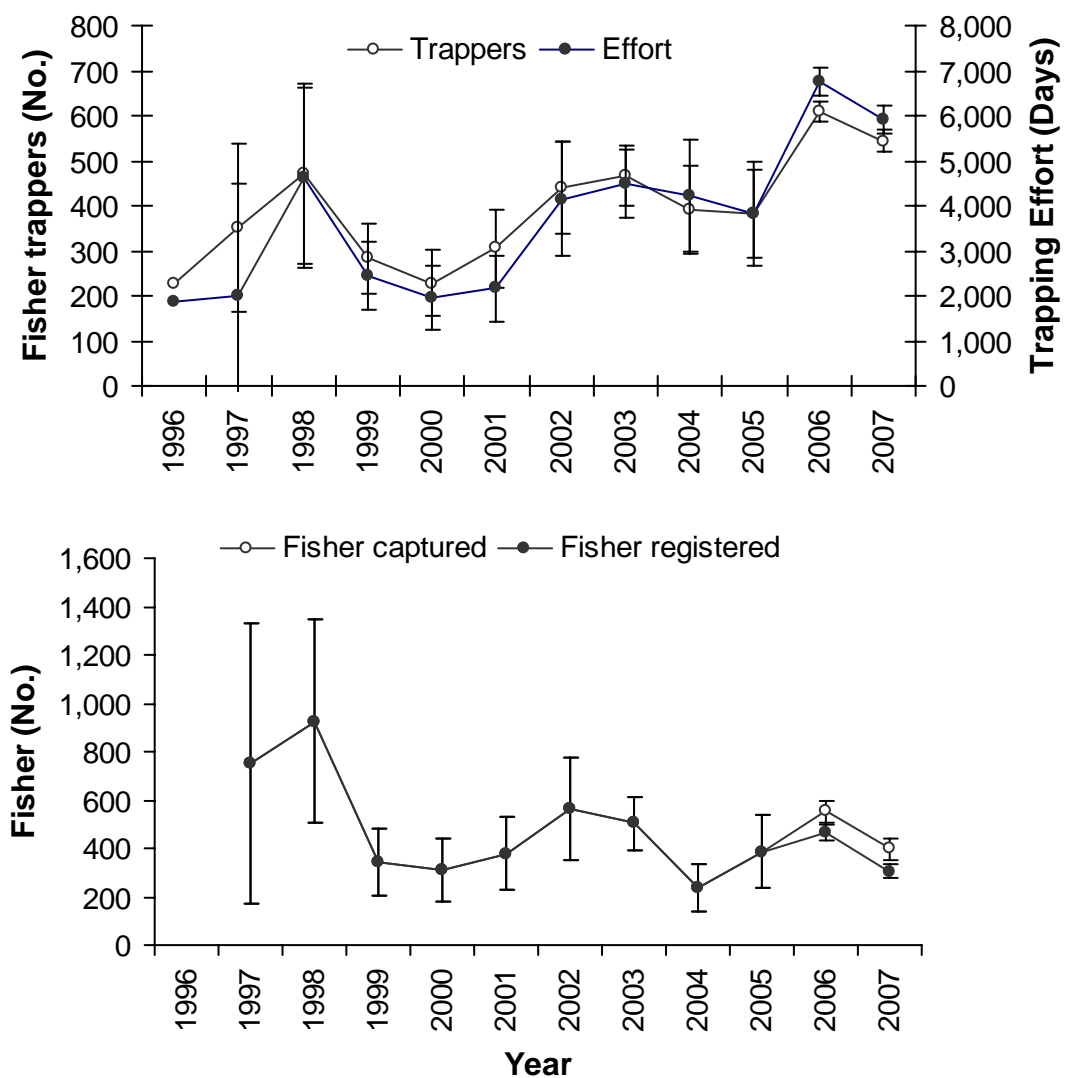


Figure 4. Estimated number of trappers, trapping effort (days), and number of fisher captured and registered in Michigan, 1996-2007.

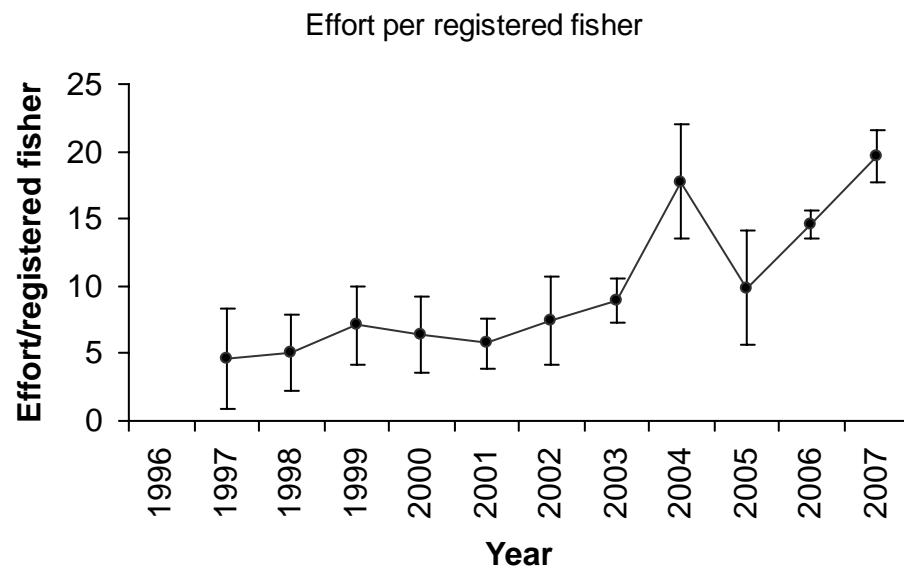


Figure 5. Estimated mean number of days required to harvest a fisher in Michigan during 1997-2007. Vertical bars represent the 95% confidence interval.